What is Claimed:

1. A method of manufacturing a Coriolis flowmeter adopted to extend a received process material flow having an ultra high level of purity free from contamination due to ion transfer from said Coriolis flow meter to said process material; said method comprising the steps of:

coupling a flow tube means to a base;

affixing a driver to said flow tube means;

coupling a pick-off means to said flow tube means; and

affixing inlet and outlet ends of said flow tube means to at least one process connection to form an ultra pure flow path for a process material flow through said flow tube means.

2. The method of claim 1 characterized in that said step of coupling said flow tube means to said base further comprises the step of using said flow tube means formed from PFA to maintain said process material flow free from contamination due to ion transfer from material of said flow tube means to said process material.

3. The method of claim 1 characterized in that said step of coupling said flow tube means to said base is proceeded by the step of etching said flow tube means to create a surface suitable for coupling and affixing flowmeter components.

4. The method of claim 3 characterized in that said etching step comprises the step of using an etching solution containing a glycol diether.

5. The method of claim 3 characterized in that said etching step comprises the step of heating an etching solution to an elevated temperature.

6. The method of claim 3 characterized in that said etching step comprises the step of agitating said flow tube means in an etching solution.

7. The method of claim 1 characterized in that said step of coupling said flow tube means to said base is proceeded by the step of straightening said flow tube means to eliminate any inherent curvature or unwanted residual bends.

8. The method of claim 7 characterized in that said straightening step comprises the steps of:

placing said flow tube means in a straightening fixture;

heating said flow tube means and said straightening fixture;

cooling said flow tube means and said straightening fixture; and

removing said flow tube means from said straightening fixture.

9. The method of claim 1 characterized in that said step of coupling said flow tube means to said base comprises the step of attaching said flow tube means to said base using adhesive.

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10. The method of claim 9 characterized in that said step of coupling said flow tube means to said base using said adhesive comprises the step of using cyanoacrylate adhesive.

11. The method of claim 1 characterized in that said step of coupling said flow tube means to said base comprises the step of coupling said flow tube means to said base using an O-ring.

12. The method of claim 1 characterized in that said step of affixing said driver means to said flow tube means further comprises the step of attaching said driver means to said flow tube means using adhesive.

13. The method of claim 12 characterized in that said step of affixing said driver means to said flow tube means further comprises the step of using cyanoacrylate adhesive.

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14. The method of claim 1 characterized in that said step of coupling said pick-off means to said flow tube means further comprises the step of attaching said pick-off means to said flow tube means using adhesive.

15. The method of claim 14 characterized in that said step of coupling said pick-off means to said flow tube means further comprises the step of using cyanoacrylate adhesive.

16. The method of claim 1 further comprising coupling said at least one process connection to said base.

17. The method of claim 16 characterized in that the step of coupling said process connection to said base comprises the steps of:

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forming a receiving hole into said base; and

securing a fixed element of said process connection into said receiving hole.

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18. The method of claim 17 characterized in that the step of securing said fixed element of said process connection into said receiving hole comprises the step of adhering said fixed element of said process connection into said receiving hole.

19. The method of claim 18 characterized in that said step of adhering said fixed element of said process connection into said receiving hole further comprises the step of using cyanoacrylate adhesive.

20. The method of claim 17 characterized in that said step of securing said fixed element of said process connection into said receiving hole comprises the step of threading said fixed element of said process connection into said receiving hole.

21. The method of claim 17 characterized in that said step of securing said fixed element of said process connection into said receiving hole comprises the steps of:

forming a locking hole whose centerline intersect the centerline of the receiving hole; and

inserting a locking mechanism into said locking hole to prevent said fixed element of said process connection from moving.

22. The method of claim 21 characterized in that said step of inserting a locking mechanism into said locking hole comprises inserting a set screw that compresses said fixed element of said process connection.

23. The method of claim 16 characterized in that said step of coupling said process connection to said base comprises the step of adhering a fixed element of said process connection onto said base.

24. The method of claim 23 characterized in that said step of adhering said process connection to said base further comprises the step of using cyanoacrylate adhesive.

25. The method of claim 1 characterized in that said step of affixing said ends of said flow tube means to said at least one process connection comprises the steps of:

flaring said end of said flow tube means; and

inserting said flared end of said flow tube means onto conical stub of said at least one process connection.

26. The method of claim 1 characterized in that said step of affixing said end of said flow tube means to said at least one process connection comprises the steps of:

inserting said end of said flow tube means through said at least one process connection until said end of said flow tube means are flush with face of said at least one process connection; and

sealing said end of said flow tube means to said face of said at least one process connection.

27. The method of claim 26 characterized in that said step of sealing said end of said flow tube means to said face of said at least one process connection comprises the step of adhering said end of said flow tube means to said face of said at least one process connection.

28. The method of claim 26 characterized in that said step of sealing said end of flow tube means to said face of said at least one process connection comprises the step of ultrasonically welding said end of said flow tube means to said face of said at least one process connection.

29. The method of claim 26 characterized in that said step of sealing said end of flow tube means to said face of said at least one process connection comprises the step of heat tip welding said end of said flow tube means to said face of said at least one process connection.

30. The method of claim 26 characterized in that said step of sealing said end of flow tube means to said face of said at least one process connection comprises the step of laser welding said end of said flow tube means to said face of said at least one process connection.

31. The method of claim 1 characterized in that said step of coupling said pick-off means to said flow tube means comprises the step of making portions of said flow tube means opaque in order to facilitate use of optical pick-offs.

32. The method of claim 1 further comprising affixing a temperature sensing device to said Coriolis flowmeter.

33. The method of claim 32 characterized in that said step of affixing a temperature sensing device comprises the step of affixing a resistance temperature measuring device to said Coriolis flowmeter.

34. The method of claim 32 characterized in that said step of affixing a temperature sensing device comprises the step of affixing an infrared temperature measuring device to said Coriolis flowmeter.

35. A Coriolis flowmeter for measuring a process material flow having an ultra high level of purity free from contamination due to ion transfer from said flow meter to said process material; said Coriolis flowmeter comprising:

a base;

flow tube means coupled to said base;

a driver affixed to said flow tube means for vibrating said flow tube means at the resonant frequency of said flow tube means with process material flow;

pick-off means coupled to said flow tube means for generating signals representing induced Coriolis deflections of the portions of said vibrating material filled flow tube means proximate said pick-off means; and

at least one process connection means coupled to said flow tube means to form an ultra pure flow path for a process material to flow through.

36. The Coriolis flowmeter of claim 33 characterized in that said flow tube means is formed of PFA to maintain said process material flow free from contamination due to ion transfer from said flow tube means to said process material.

37. The Coriolis flowmeter of claim 35 characterized in that said Coriolis flow meter comprises an O-ring for coupling said flow tube means to said base.

38. The Coriolis flow meter of claim 35 characterized in that said process connection means is coupled to said base.

39. The Coriolis flowmeter of claim 38 characterized in that said base comprises at least one receiving hole for securing a fixed element of said process connection means.

40. The Coriolis flowmeter of claim 39 characterized in that said receiving hole is threaded.

41. The Coriolis flowmeter of claim 35 characterized in that said base comprises at least one locking hole for securing said process connection means into said receiving hole.

42. The Coriolis flowmeter of claim 41 characterized in that said locking hole is threaded.

43. The Coriolis flowmeter of claim 41 characterized in that said locking hole comprises a locking mechanism.

44. The Coriolis flowmeter of claim 43 characterized in that said locking mechanism is a set screw.

45. The Coriolis flowmeter of claim 35 characterized in that said process connection means is of the flare connection type.

46. The Coriolis flowmeter of claim 35 characterized in that said flow tube means comprises portions that are opaque preventing light from passing through said flow tube means.

47. The Coriolis flowmeter of claim 35 characterized in that said Coriolis flowmeter further comprises a temperature sensing device.

48. The Coriolis flowmeter of claim 47 characterized in that said temperature sensing device is of the resistive type.

49. The Coriolis flowmeter of claim 47 characterized in that said temperature sensing device is of the infrared type.